USDA FOREST SERVICE

RESEARCH NOTE NC-150

NORTH CENTRAL FOREST EXPERIMENT STATION, FOREST SERVICE—U.S. DEPARTMENT OF AGRICULTURE

Folwell Avenue, St. Paul, Minnesota 55101

CONTROLLING LOPHODERMIUM NEEDLECAST ON SCOTCH PINE CHRISTMAS TREES

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ABSTRACT.--Describes the currently recommended methods for controlling Lophodermium needlecast in Scotch pine plantations.

OXFORD: 443.3--172.8 *Lophodermium pinastri*--414.1:281:174.7 *Pinus sylvestris*. KEY WORDS: fungicides, plantation care, forest damage.

Lophodermium needlecast caused severe damage to red and Scotch pine seedlings in at least 25 forest nurseries in 10 States from 1966 to 1973. Since 1971, Lophodermium damage to Scotch pine Christmas tree plantations has been reported from 14 States and one Canadian Province.

Reported here are the latest control recommendations based on research conducted by the North Central Forest Experiment Station. These recommendations are only for control of Lophodermium needlecast and may not be applicable for other foliage diseases. The exact timing of control procedures may vary somewhat with geographical location. The recommendations reported here apply generally to the Lake States and Northeastern States. For other areas, determine the major Lophodermium spore release and infection periods and apply one of the recommended fungicides before spore release.

DETECTION

Scotch pine Christmas tree plantations should be closely watched for outbreaks of Lophodermium needlecast, particularly in the spring when symptoms are most evident. Early detection and control can prevent the serious losses that have occurred in many plantations. A new publication, "How to identify Lophodermium and brown spot diseases on pines," is a useful aid for the early detection of Lophodermium. It is available on request from: USDA Forest Service, 638 Federal Courts Building, St. Paul, Minn. 55101.

Short-needled Scotch pine varieties (especially Spanish and French-green) are the most susceptible. Most infected needles are found on the lower branches of the tree, although sometimes extremely heavy infection will be found throughout the tree. Needle spots, produced by the previous year's infection, begin appearing in spring. These infected 1- and 2-year-old needles begin yellowing and turning brown in April, May, and June. Before bud break, all the foliage of heavily infected trees will appear brown. By late fall most of the infected needles have dropped leaving only the current year's needles. This results in thin foliage and an unsalable Christmas tree. Small, black football-shaped bodies can be found during late summer and fall on dead needles still attached to branches or on infected needles that have been cast.

FUNGICIDE CONTROL

What to Spray

Two fungicides are currently registered for control of Lophodermium needlecast: chlorothalonil (tetrachloroisophthalonitrile) (Bravo W-75, Daconil 2787, Bravo 6F) and maneb (manganese ethylene bisdithiocarbamate) (Manzate 200, Manzate D, Dithane M-22). Both are easy to handle, non-corrosive to spray machinery, relatively safe, and have proved effective in controlling Lophodermium in tree nurseries and Christmas tree plantations. And both are compatible with wettable powder formulations of most commonly used fungicides, insecticides, and miticides. Follow label for emulsifiable formulations.

Apply either fungicide at rate of 2-1/2 pounds per 100 gallons of water in hydraulic spray equipment or 6 pounds per 100 gallons in high-pressure mist-blower. Use 4 ounces of a surfactant (such as DuPont spreader-sticker) per 100 gallons of water for maneb. No spreader-sticker is needed for chlorothalonil.

How to Spray

A sprayer must have a working pressure sufficient to completely moisten all tree foliage. Hydraulic sprayers use about 100 gallons per acre; mist-blowers use about 40 gallons per acre. A large air-blast mist-blower is the most economical equipment to use providing there are no more than 20 rows of trees between roadways and the trees are sprayed from both sides. Spray should not be applied when it is windy or rainy.

When to Spray

In moderately to heavily infected plantations (hundreds to thousands of infected trees), apply spray three times: about July 25 (when new foliage is elongated), about August 15, and about September 10.

In lightly infected plantations (less than 100 trees infected), apply sprays on August 1 and September 1.

Do not spray plantations that do not show signs of Lophodermium infection.

SPECIAL PRECAUTIONS

- Examine nursery stock closely before planting to make sure it is not diseased. Look for needle spots and browning of foliage.
- Avoid planting Scotch pine seedlings intended for Christmas trees next to old Scotch pine windbreaks. The latter may be a reservoir for the fungus.
- When harvesting trees, especially in infected plantations, do not leave any live branches on stumps. If new seedlings are planted near such stumps, they may become infected from diseased needles remaining on branches attached to the stumps.
- The Spanish Scotch pine variety is extremely susceptible to Lophodermium needlecast and brown spot needle blight as well as winter burn in the northern States. As a result, this variety is no longer recommended for Christmas tree plantations.

ADDITIONAL HELP

If you suspect your Christmas trees are infected with a needlecast fungus or if you need additional help, please contact one of the following offices:

Your local Department of Natural Resources Forester.

Forest Pest Management Group, State & Private Forestry, USDA Forest Service, in your area.

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Mention of trade names does not constitute endorsement of the products by the USDA Forest Service.

PESTICIDE PRECAUTIONARY STATEMENT

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key--out of the reach of children and animals--and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first-aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the Federal Environmental Protection Agency, consult your county agricultural agent or State extension specialist to be sure the intended use is still registered.